



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

41-07-03

Log Event A

Borehole Information

Farm : <u>SX</u>	Tank : <u>SX-107</u>	Site Number : <u>299-W23-75</u>
N-Coord : <u>35,344</u>	W-Coord : <u>75,617</u>	TOC Elevation : <u>663.27</u>
Water Level, ft :	Date Drilled : <u>2/20/1962</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>75</u>	

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>03/1995</u>	Calibration Reference : <u>GJPO-HAN-1</u>	

Logging Information

Log Run Number : <u>1</u>	Log Run Date : <u>6/6/1995</u>	Logging Engineer: <u>Mike Widdop</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>75.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Borehole

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Analysis Information

Analyst : S.E. KosData Processing Reference : Data Analysis Manual Ver. 1Analysis Date : 10/2/1995**Analysis Notes :**

This borehole was logged in one logging run. The pre- and post- verification spectra indicate that the logging system was operating properly. The energy/channel drift observed during the log run was minimal, and multiple energy calibrations were not necessary to process the data.

The casing thickness is 5/16-in. (0.3215 in.). The correction used for data processing was for 0.33-in.-thick casing; therefore, a slight over-estimation of radionuclide activity was calculated. The borehole was dry; no water correction was required.

The only man-made radionuclide identified was Cs-137. It was detected from ground surface to a depth of 16.5 ft, intermittently throughout the borehole, and at the bottom of the borehole. The maximum activity of 4 pCi/g was measured at ground surface.

Elevated low-energy background was observed at a depth of about 8 ft. This elevated count rate may be caused by bremsstrahlung radiation from a high-energy beta radiation emitter such as Sr-90.

Additional details regarding interpretation of the data for this borehole is presented in the Tank Summary Data Report for tank SX-107.

Log Plot Notes:

Three log plots are provided. The Cs-137 activity is plotted on a separate plot to provide details of activity and distribution.

The natural gamma-ray logs show the activities of the naturally occurring radionuclides potassium (K-40), uranium (U-238), and thorium (Th-232). The KUT plot is provided to allow correlation of lithologic features between boreholes. The KUT activities observed in this borehole are typical for Hanford Site sediments.

A combination plot incorporates the Cs-137 and KUT log data with the total gamma-ray count rate derived from the spectral gamma-ray data and the gross gamma-ray data acquired with the WHC Tank Farm gross gamma-ray logging systems. This plot allows correlation of the Cs-137 contamination zones with lithologic features and with the gross gamma-ray historic record.

The statistical uncertainty in a measurement is represented on the log plots by uncertainty bars where appropriate. This uncertainty is reported at the 95-percent confidence interval. The minimum detectable activity (MDA) of a radionuclide represents the lowest activity at which positive identification of a gamma-ray peak is statistically defensible. The MDA values are indicated on the log plots by open circles. If the reported activity is slightly above the MDA, the 95-percent confidence interval may extend below the MDA value and the measurement cannot be stated with 95-percent confidence.

The Tank Farm gross gamma-ray plot is produced from the most recent data available from WHC. No corrections other than scale adjustments for plotting have been made to the data.